

## Introduction

The Wattius wBMS-R24 is a compact Battery Management System developed to work with up to 24-cell lithium batteries while safely providing extended isolated interface possibilities. The system has been designed to meet all relevant industry requirements such as IEC61508.

This system can monitor and balance up to 24 cells in series with total maximum voltage measurement error of  $\pm 1,5$  mV for the entire range. It features state-of-the-art low power mode as well as integrated hardware and software diagnostics.

Multiple wBMS-R24 units can be connected in parallel without additional hardware. The system automatically handles string connection and provides a single control interface with the inverter / charger.

The wBMS-R24 protects the battery by driving up to 6 power contactors, calculates advanced parameters such as SoC and SoH and features multiple interface possibilities such as CAN bus, Bluetooth, and USB.

## Connectivity

- CANbus, Bluetooth & USB.
- Real-Time logging of events, alarms and operation data to microSD card.
- Monitoring, configuration & analysis with free wBMS-Toolkit PC software.

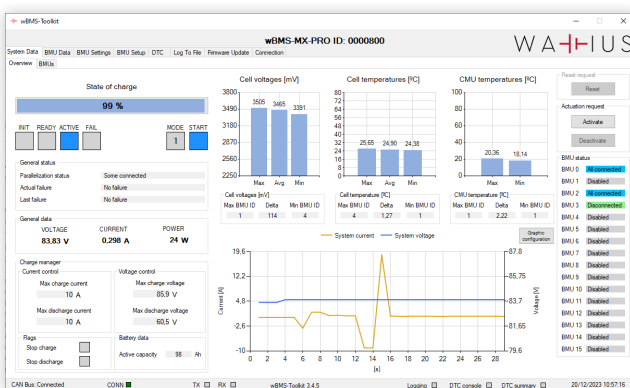
## Performance

- Up to 24 cell measurement with  $\pm 1,5$  mV max. error.
- Ultra low power mode ( $< 15$  mW).
- High-precision SoC algorithm.
- Up to 300mA autonomous balancing
- Parallelization of up to 16 devices.
- EMC CE Class A & B compatible.

## Safety

- IEC61508 compatible design and components.
- Internal diagnostics and safety-critical redundant systems.
- Cell and relay open-wire detection.

## wBMS-Toolkit

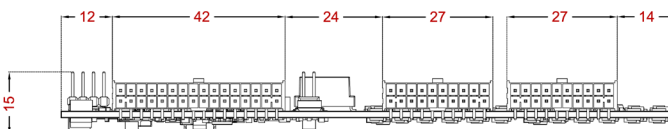
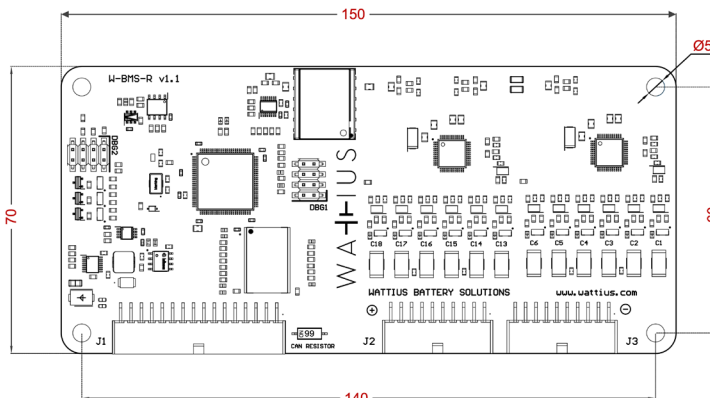


The wBMS-R24 is compatible with the wBMS-Toolkit, our Windows software provided free of charge:

- Monitor all **BMS data** in real time.
- Configure **hundreds of configuration parameters**.
- Data logging, diagnostics and flags.
- Firmware update.

**Main Specifications**

<b>Power Supply</b>	10 - 36 Vdc. < 15 mW in deep sleep mode. Independent input for output supply.
<b>Cell measurements (voltage &amp; temperature)</b>	Multiple cell chemistry and supercapacitors. Extended internal redundancy and hardware integrity diagnostics. Open wire detection.
<b>Cell voltage</b>	5 - 24 cells. 0 - 5 Vdc. ± 1,5 mV cell voltage max total error.
<b>Cell temperature</b>	Up to 6 channels. Configurable NTC 10 kΩ. ± 1°C cell temperature max total error.
<b>Balancing</b>	Autonomous. Configurable. Up to 300 mA per channel.
<b>Current sensing</b>	External 0 - 5 Vdc hall current sensor. < ± 0,1 mV.
<b>CAN Interface</b>	CAN bus 2.0 A/B (Up to 1Mb/s). Referenced to external power supply. Configurable termination resistor with switch.
<b>Other interfaces</b>	Mini USB 2.0. Bluetooth 5.0 Low Energy.
<b>General Input</b>	2x analog / digital (configurable) signal up to 36 Vdc. 4x dry contact digital input. Configurable to multiple functions (ignition key, HVIL, relay feedback etc.).
<b>General Output</b>	6x independent channels. External supply voltage. Maximum total output 4 A. External fuse recommended. Channel 1-4: 2 A nominal, 4 A peak per channel. Channel 5-6: 1 A nominal, 2 A peak per channel. Adjustable PWM @ 10 kHz max. Open circuit, short-to-battery and short-to-ground detection.
<b>Memory</b>	Integrated redundant EEPROM to store system configuration and maximeter. MicroSD support (up to 32 GB). MicroSDHC Class 10 is recommended.
<b>Operating temperature range</b>	-40 to +85 °C
<b>Parallelization</b>	Up to 16 devices in parallel without external hardware.



Dimensions in mm



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